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A CLASSIFICATORY SYSTEM FOR CRYPTOZOOLOGY

J. RICHARD GREENWELL
P.O. Box 43070, Tucson, Arizona 85733, U.S.A.

ABSTRACT: Various definitions of cryptozoology are reviewed, and a new classificatory system for the field is proposed. The classificatory system has seven categories. Only Categories II through VI are fully cryptozoological; Categories I and VII do not meet all the qualifying requirements, making them only semi-cryptozoological. The terms "unexpected" and "ethnoknown" are defined, and it is noted that most of the categories in the proposed classification, but not most of the individual claims, concern taxa already scientifically described. The seven categories are objectively defined, and examples of both historical precedents and unresolved claims are reviewed. The classificatory system is intended to reduce subjectivity, increase objectivity, and serve as a tool to future researchers and scholars. It does not dictate what cryptozoology is concerned with, but provides a means through which cryptozoological information can be organized into a logical framework. The classificatory system is flexible, and permits precedents to shift from one category to another in accordance with new facts, or, in the case of claims, with the user's personal preferences.

INTRODUCTION

The scientific practice of cryptozoology has been of growing interest to scientist and layman alike in recent years. The question of the possible existence of unknown animals—or even surviving "fossil" animals—in our modern age has intrigued many. It has also resulted in much confusion on the part of both proponents and critics of cryptozoology, which, in turn, has stemmed from a lack of a clear understanding of what cryptozoology actually is.

Although most persons interested in the topic claim knowledge of what cryptozoology "is," it is remarkable how different perceptions may be obtained from different individuals. To increase our understanding in this area, the author will review the various definitions which have been proposed, and then propose a new classificatory system which could serve as a practical tool for future researchers and scholars.

Definitions of Cryptozoology

The first clear definition of cryptozoology in the literature is by Bernard Heuvelmans (1974), who described it as "the science of hidden animals . . . in practical terms it means the study of, and the search for, animal species whose existence, because of a lack of specimens or any significant anatomical material, has not yet been officially recognized." This was followed by Roy P. Mackal (1980) who defined it as "an area of study within the main corpus of zoology . . . specifically dealing with the study and search for unidentified living animals." This definition could be misunderstood because "unidentified living animals" would include many millions of living invertebrates, mainly insects, which remain to be described. What makes cryptozoology different is that it investigates certain supportive evidences of the existence of supposed animal species *prior to those species being collected, fully documented, and/or described scientifically.* Such evidences may be 1) indirect, in the form of archaeological relicts, art work, old manuscripts, or oral traditions or legends; or 2) direct, in the form of verbal or written reports of observations of supposedly undescribed animals, from either local or native peoples of an area, or from outside travelers or explorers who visit it.

This prior human knowledge of an animal before its "official" existence is an absolute requirement for cryptozoology, and it is embedded in several more recent definitions given by Heuvelmans, the acknowledged "father" of the field:

> The science of *hidden* animals . . . more generally referred to as "unknowns," even though they are typically known to local populations—at least sufficiently so that we often indirectly know of their existence, and certain aspects of their appearance and behavior (Heuvelmans 1982).
>
> A systematized search for unknown species of animals about which some testimonial and circumstantial evidence is available (Heuvelmans 1984a).
>
> The search for animal species still undescribed by science *but on which some information is available* (Heuvelmans 1984b).
>
> The science which deals with hidden animals. "Hidden" animals are animal species or subspecies still unknown to or undescribed by traditional zoology (in fact, unrecognized by a consensus of its representatives) because their asserted or alleged existence is supported either by testimonial and circumstantial evidence only, or by autoptical (i.e., material) evidence considered insufficient by some (Heuvelmans, in preparation).
>
> The scientific study of unknown or undescribed animal forms about which only testimonial and circumstantial evidence is available, or material evidence considered insufficient by some (Heuvelmans, personal communication).

Because of the peculiar station of cryptozoology within the zoological sciences, a precise, all-encompassing definition is difficult to produce. This problem was addressed by the Board of Directors of the International Society

of Cryptozoology at its founding meeting in early 1982. After much discussion, the Board concluded that cryptozoology should be concerned with "animals of unexpected form or size, or unexpected occurrence in time or space." The key work here is "unexpected." So, according to the founders of the Society (including Heuvelmans), to fall within the domain of cryptozoology, an unknown-to-science animal not only has to be known or hinted at prior to its "official" discovery, but it also has to be considered "unexpected" when the official discovery is actually made. "Unexpectedness" is a somewhat subjective term which is not altogether appropriate when attempting to define a concept objectively, and different observers can differ in their opinions concerning *how* unexpected something is. Nevertheless, most would agree that the discovery of a living "fossil" form (as happened with the coelacanth, *Latimeria*) would be quite unexpected in the full and proper meaning of the word.

To incorporate this new qualifier, and to expand the definition of cryptozoology to include all forms of evidence, this author recently proposed the following definition:

> The investigation and evaluation of sightings (or other forms of organic, electronic, historical, linguistic, artistic or archaeological evidence) of supposedly unknown, or undescribed, or uncollected, or extinct animals, reported in a consistent fashion by different eyewitnesses (including reports from aboriginal peoples, although the supposed animals may not be unknown to them), and the discovery of which would be considered "unexpected" by zoologists (Greenwell 1985).

Heuvelmans (personal communication) has criticized this definition as being too long and cumbersome, and, in retrospect, his criticism is not without merit. Nevertheless, it is also included here for the record.

The Proposed Classification

In early 1984, the well-known evolutionist George Gaylord Simpson published a lengthy critique of the concept and practice of cryptozoology (Simpson 1984). While the critique contained numerous interesting points—as well as some surprising errors—it was clear that the author had essentially failed to fully grasp what cryptozoology represented as a scientific pursuit.

In the course of studying his paper, as well as other recent criticisms (May 1984, Diamond 1985), it became increasingly apparent to this author that cryptozoology lacked a descriptive framework within which to organize and analyze its information, and which would reduce the subjectivity which as tended to infiltrate the writings of both critics and proponents. Previous reviews had followed a geographical sequence (unknown animals in South America, Africa, etc.), or a zoological one (mammals, reptiles, etc.). What was lacking was a purely objective classification scheme that, regardless of whether one is a proponent or a critic, could be used to classify crypto-

zoological claims in terms of the kinds of evidence they supposedly represented, regardless also of the geographical or phylogenetic origins thought to be involved.

The classificatory system proposed below evolved over a period of time, benefitting from the review and criticism of various individuals. Seven categories have been erected, only five of which are fully cryptozoological. These are, respectively, Categories II through VI (the reason for this becomes clear below). It is here proposed that, to be fully cryptozoological, categories must necessarily have 1) at least one historical precedent, demonstrating that such a claim, however unlikely, proved to be correct in the past, and 2) a current unresolved claim.

The seven categories are objectively defined below:

Category I: Individual representatives of known, extant species whose form or size is unusual or unique for the species, or whose coloration or pattern is in some way extraordinary (because only individual—not species—variation is involved, and relative rather than absolute differences are dealt with, this category is not cryptozoological in the complete sense of the definition).

Category II: Extant and well-known taxa unrecognized as existing in certain geographical areas because of inconclusive evidence.

Category III: Presumably extant taxa, not representing fossil forms, described from only limited organic evidence, such as skin, bone, or tissue, with no complete specimens ever collected.

Category IV: Known taxa which supposedly became extinct during historical times, but which may have survived far longer than originally believed, or may have survived to the present.

Category V: Representatives of fossil forms believed to have become extinct during geological times, but which may have survived into historical times, or even to the present.

Category VI: New taxa of known, extant forms, for which no known organic evidence exists.

Category VII: New taxa which, although "unexpected," were not known previously to aboriginal peoples or other eyewitnesses, although they may have fossil representatives (because of the presumed lack of human knowledge prior to the discovery of these animals by science, this category is not cryptozoological in the complete sense of the definition).

A new term, "ethnoknown," is also proposed, in order to simplify and reduce a concept into a single word. "Ethnoknown" is used to represent prior human knowledge of an animal, as discussed above, whether it be in the form of modern sighting reports, ancient depictions or manuscripts, or oral traditions or legends. Such prior human knowledge may come from

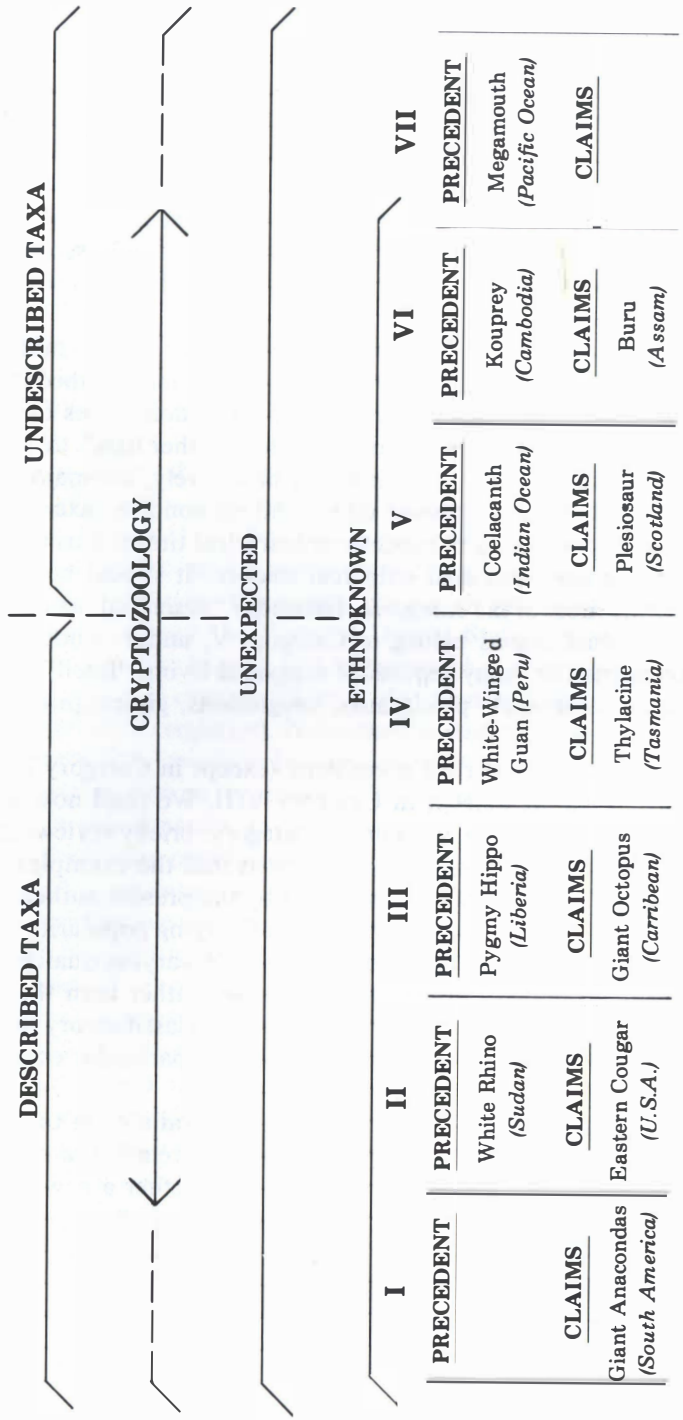

FIG. 1.—A schematic representation of the proposed classificatory system for cryptozoology. Although all seven categories fall under the concept of "unexpectedness," Categories I and VII are considered only semi-cryptozoological. Four of the categories concern taxa already scientifically described as existing in historical times. The examples given under Claims are not necessarily supported by the author.

both native peoples (Scots living alongside Loch Ness are here considered "native peoples"), as well as traveling outsiders or explorers. The term "ethnoknown," then, simply means *some* kind of human knowledge prior to full scientific discovery and description, and this requirement is already a basic tenet of cryptozoology (Heuvelmans 1982, 1984a, 1984b).

In Fig. 1, the seven categories are spread out in schematic form. It will be observed that, while all fall under the concept of "unexpectedness," as discussed previously, Categories I and VII are considered only semi-cryptozoological. In addition, Category VII does not fall under the important concept of "ethnoknown."

A final observation is that four of the seven categories come under the main heading of "described taxa," and only three under "undescribed taxa." On the one hand, this represents a problem for those definitions of cryptozoology which address "unknown" animals. On the other hand, this demonstrates that, when cryptozoology is classified objectively, the majority of its categories (at least in this proposed classification) concern taxa already scientifically described as living in modern or historical times, thus refuting some notions that it does not deal with real science. It should be added, however, that, while most of the *categories* fall under "described taxa," most of the actual individual *claims* belong to Category V, under "undescribed taxa," which concerns the many reports of supposed living "fossil" forms, such as pterosaurs, dinosaurs, plesiosaurs, zeuglodons, gigantopithecines, and neanderthaloids.

Fig. 1 lists examples of historical precedents (except in Category I), and examples of current claims (except in Category VII). We shall now move through the classification system, category by category, briefly reviewing the examples given in Fig. 1. It should be emphasized that the examples used for current claims are not necessarily supported by the present author; they merely are used as examples to represent claims of varying popularity made by others at different times, and based on evidence of varying quality.

Some readers may prefer to insert other examples rather than the ones given, and that is to be expected. It is the proposed classificatory system itself which the author thinks is relevant here, not the particular examples used.

Category I Precedent: There is no clear precedent available in this category, simply because the evidence being claimed is of a relative rather than an absolute nature. It is not a clear-cut question of whether a new species exists or not; rather, it concerns to what degree an individual of a scientifically *known* species differs from the norm in terms of size, coloration or pattern. For these reasons, this category is not considered fully cryptozoological, and the corresponding area is left blank in Fig. 1.

Category I Claim: The example used in Fig. 1 concerns giant individuals

of the South American anaconda, *Eunectes murinus*. Most herpetologists believe that 30 feet is about the length limit for the anaconda, as well as for the Afro-Asian pythons. There are many reports of larger snakes, and a $50,000 reward still stands with the New York Zoological Society for a live snake measuring over 30 feet. Reports of giant estuarine crocodiles, giant white sharks, and giant sturgeon also fall under this category. Many of these reports probably result from exaggerated stories, but some may involve actual individual giants (Wood 1982). It should be emphasized here that this category deals only with *known* species. If it later turns out that a "giant" anaconda or a "giant" white shark belongs to a new, previously undescribed species—or even a fossil species—then this claim (which would then actually become a precedent) would shift to a different category.

Category II Precedent: The white rhinoceros (*Ceratotherium simum*) was originally known to zoology only from southern Africa, but it was subsequently discovered as a subspecies (*C. s. cottoni*) in Sudan, a distance of about 2,000 miles (Lydekker 1901). This late discovery of such a large terrestrial mammal in what was thought to be a well-explored, open-range area, has implications for other areas of cryptozoology.

Category II Claim: The puma, cougar, or mountain lion (*Felis concolor*) is found throughout the Western United States, as well as most parts of Latin America. The Eastern U.S. subspecies has been considered extinct, however, for almost a century (there is also a precariously surviving subspecies in the Florida Everglades). Nevertheless, sighting reports from throughout the Eastern U.S. continue to come in (Downing 1984), despite the lack of federal recognition or protection. If it is eventually established that breeding cougar populations do, in fact, exist in the East, it will be necessary to determine if these populations represent the original subspecies now thought extinct (*F. c. couguar*), migrations of other subspecies to the Eastern U.S., or released captive animals representing any number of subspecies—or even all three possibilities occurring in unison.

Category III Precedent: According to Willy Ley (1948), the pygmy hippopotamus (*Choeropus liberienses*) was described by Samuel G. Morton in the 1840's based on a single skull sent to him from Liberia (Morton 1844). As it later turned out, this animal was quite different anatomically from the hippopotamus, and was not just a pygmy version of it. Specimens were sent to Holland and Germany later in the 19th Century, but it took Carl Hagenbeck, the famous German animal collector, to bring out a live specimen, in 1913, by which time disbelief in the animal had set in. Hagenbeck sent Hans Schomburgk to Liberia to do the job. Heuvelmans (1958), however, states that a young pygmy hippo was acquired by the Dublin Zoo in 1870, but that it died soon after arrival. They concur, nevertheless, that Schomburgk was probably the first white man to see the pygmy hippo in its natural environment, for whatever distinction such a feat may bestow. Although

some of the events surrounding the "discovery" and description of the pygmy hippo are unclear, it is clear that the original scientific description by Morton was made long before a complete specimen was at hand, and, in the interval, doubts arose as to the very existence of the animal.

Category III Claim: The giant octopus was originally described by A. E. Verrill in 1897, based on an organic mass which had washed ashore at St. Augustine, Florida (Verrill 1897a). Although Verrill subsequently rejected the octopus hypothesis (Verrill 1897b), the scientific name, *Octopus giganteus,* still applies—but only (if the author correctly understands the International Code of Zoological Nomenclature) when and if the St. Augustine material turns out to be, in fact, from a giant octopus, irrespective of whether *other* giant octopuses are found to exist. The case was resuscitated in the 1960's, and modern scientific analysis of the St. Augustine material—which had fortunately been preserved at the U.S. National Museum—hinted at octopus tissue rather than squid, whale blubber, or other marine organic matter (Wood and Gennaro 1971). Since then, amino acid analysis has further supported the octopus hypothesis (Gennaro and Mackal 1985), and further work involving immunological analysis is to be carried out shortly (Mackal, personal communication).

Category IV Precedent: The white-winged guan (*Penelope albipennis*) is a relatively large Peruvian bird of the family Cracidae believed extinct for a century, until the living species was rediscovered in 1977 by an ornithological team from Louisiana State University (de Macedo-Ruiz 1979). By their nature, birds are very susceptible to species depletion and extinction, and, of all vertebrates, they are the least represented in the annual finds of new species (Heuvelmans 1983). It was thus significant that a bird of such large size, weighing up to 4.5 lb. and measuring over 3 feet, persisted so long in an "extinct" state, particularly as it was actively sought between 1952 and 1968. It subsequently was learned that the local inhabitants knew the bird well in its northwestern Peru habitat.

Category IV Claim: The thylacine or "Tasmanian tiger" (*Thylacinus cynocephalus*) was last known in a wild state in 1930, although the last captive specimen lived until 1933 in the Hobart Zoo. Since that time, innumerable eyewitness sightings and footprint finds lend support to the notion that it may yet survive in remote forest areas of Tasmania (Rounsevell and Smith 1982). Nevertheless, expedition after expedition, right up to the present time, has failed to produce a specimen, or even substantial evidence of the species' survival (Guiler 1966, Smith 1982). Its eventual rediscovery, should it ever occur, would demonstrate that even a known animal can avoid definitive scientific detection over at least a 50-year period. (Reports of thylacines on mainland Australia also occur from time to time. However, as the species supposedly became extinct there in the late Pleistocene—rather than the 20th Century—such claims properly belong to Category V).

Category V Precedent: The coelacanth fish, *Latimeria,* represented a form believed extinct since the end of the Cretaceous. However, it was discovered alive in late 1938, and a complete specimen, after many years of intensive searching, was found in late 1952 (Smith 1957). Despite the living coelacanth's significance to paleontology and ichthyology, Comoro Islanders had long used coelacanth scales to wipe the mud off of their bicycle tires. Although there have been a number of other "fossil" animals found in historical times, even to the present, the coelacanth is usually considered the most important and striking example, and it is usually cited by those supporting modern claims of "fossil" animals. (As noted above, in the definition of Category V, we are dealing with "representatives of fossil forms," rather than the "fossil animals" themselves; there are usually some anatomical and physiological distinctions between the representatives of fossil forms, when discovered, and the original fossil animals, which has even been used as an argument in an attempt to reduce the significance of such finds [Simpson 1984:30].)

Category V Claim: Plesiosaurs, like their Mesozoic counterparts the dinosaurs and pterosaurs, supposedly became extinct at the Cretaceous-Tertiary boundary, or soon thereafter. The sightings of supposed large animals in Loch Ness, Scotland, which first drew worldwide attention in the 1930's, led a number of persons to propose that, because of morphological features described in eyewitness accounts, plesiosaurs had survived to our own time (Dinsdale 1961, Meredith 1977). However, Nessie, as "the monster" became known, has the distinction of having had more genera, orders and even phyla assigned to it than any other supposed animal in the annals of cryptozoology. Besides plesiosaurs, zeuglodons (also thought extinct since geological times), large pinnipeds, killer whales, giant amphibians, giant eels, and even giant invertebrates have been proposed over the years, all based on how the respective authors interpreted the evidence. Thus, although the plesiosaur hypothesis has been the most visible in the popular media, serious consideration has been—and should be—given to alternative hypotheses.

As stated above, Category V represents the area of cryptozoology most discussed by both proponents and critics, sometimes to the exclusion of all others. While it is certainly a most interesting and potentially important area, this emphasis, in this author's opinion, has resulted in some of the misconceptions as to what cryptozoology actually is. However, because of the emphasis which does exist, correctly or incorrectly, we may briefly review other claims in this category.

The survival of Mesozoic sauropods has been proposed to account for Mokele-Mbembe, a bulky animal reported in the swamps of Central Africa; the present survival of pterosaurs in Africa has also been proposed. The present or recent survival of Pleistocene mammals, such as mammoths in Siberia and ground sloths in South America, has also been suggested. Finally,

sighting reports of "wild men"—from most parts of the world—have been attributed to fossil hominoids or hominids, again depending on how the authorities involved interpret the evidence. The most prevalent hypothesis for the North American Sasquatch and the Chinese Wildman is that they are living representatives of the fossil genus *Gigantopithecus,* while the Soviet-Mongolian Almas is thought by many to represent living forms of *Homo,* of the Neanderthal lineage. Further extensive discussions of all these supposed instances of persistence from geological times to the present may be found in the works of Green (1978), Heuvelmans (1958, 1978, 1980), Heuvelmans and Porshnev (1974), Mackal (1980), Markotic and Krantz (1984), Sanderson (1961), and Shackley (1983). Heuvelmans is also currently preparing a comprehensive checklist which will include all categories of cryptozoological reports worldwide (Heuvelmans, personal communication).

Category VI Precedent: The kouprey (*Bos sauveli*) is a Southeast Asian wild ox discovered in Cambodia in the 1930's (Urbain 1937, Lekagul 1952). It was totally new to zoology, and it ranks as one of the largest terrestrial mammals found in modern times. The kouprey was thought to have become extinct in recent decades, but living specimens were found in the early 1980's, despite intense hostilities among the human populations of the area. Its future is precarious indeed.

Category VI Claim: The Buru was a large lizard-like animal which supposedly inhabited a valley in Assam, in northeast India (Izzard 1951, Mackal 1980). Although the natives of the area stated that all the reptiles had been exterminated, it is reasonable to assume that they were large monitor lizards (*Varanus*), as are the Komodo dragons. There have been repeated reports and rumors of giant monitor lizards, as large or larger than the Komodo dragon, from various parts of Southeast Asia, new Guinea, and Australia, and the question of the Buru, in this author's opinion, must be evaluated in this context. Certainly, giant monitor lizards 15 or even 20 feet in length would represent totally new species for zoology.

Category VII Precedent: The example used in Fig. 1 is megamouth (*Megachasma pelagios*), a new shark discovered in 1976 off Hawaii, and described scientifically more recently (Taylor, Compagno, and Struhsaker 1983). Also recently, in late 1984, a second specimen was recovered off the coast of Los Angeles, California. Megamouth is not only large (15 feet) and unusual as a filter-feeding shark, but it represents a new species, a new genus, and, according to Taylor et al., a whole new family. The finding of such new taxa, even in the oceans, is a relatively rare and "unexpected" event. However, as seen in Fig. 1, this category does not fall under the concept of "ethnoknown," and it is thus reduced to a semi-cryptozoological status. Heuvelmans has previously stated that such instances are not cryptozoological at all, but merely illustrate what sorts of animals might be found if cryptozoology were pursued diligently (*ISC Newsletter* 1984).

Category VII Claim: Because there is no human knowledge of these animals prior to scientific discovery, there can be no claims, which negates this category from being fully cryptozoological. Thus the corresponding area is left blank in Fig. 1.

Discussion

It is proposed that the above classificatory system could serve as a useful tool to future researchers and scholars when discussing the content, the successes, and the failures of cryptozoology. By restricting discussions to one category only, or to one category at a time, it may be possible to stimulate more objective analyses, and less subjective and emotional responses by participants in such discussions.

It should be noted that the classification does not attempt to dictate what cryptozoology is, or should be. It merely reflects what cryptozoology has been, based on an extensive review of the literature. It has taken the existing information in the literature and reassembled it to create a logical framework for future reference.

It should also be noted that, although the classification itself remains static, it provides great flexibility to the user. For example, the user may list any number of precedents under each category as he or she may locate in the literature; the individual examples given in Fig. 1 can surely be expanded upon. Furthermore, individual examples have the flexibility of shifting from one category to another, depending on what new information may become available. Thus, the kouprey belongs in Category VI with reference to its initial discovery (in the 1930's), but shifts to Category IV with reference to its rediscovery (in the 1980's). Likewise, megamouth remains in Category VII, banished forever from full cryptozoological status; but maybe not: if it were discovered in the future that some Pacific islanders had been acquainted with megamouth all along—even though we were unaware of their prior knowledge—megamouth would immediately shift to another category—in this case to VI.

Similarly, the user may list any number of claimed animals under each category as he or she may locate in the literature, and here there is more flexibility still, as the user is not bound, in this case, by the realities of historical fact, and he or she may place those claims found most appealing or palatable under the desired categories. Furthermore, if a change of mind—or heart—should ever occur concerning the zoological affinities of a reported animal, even shifting it from reptile to mammal, the classification permits this to be reflected accordingly; a supposed animal such as Nessie can shift from Category V to Category VI, if, for example, one prefers to reject the plesiosaur hypothesis and to postulate that a modern but unknown taxon, such as a large pinniped, is involved.

This classificatory system has been designed to facilitate theory and prac-

tice in cryptozoology, and has benefited from the thought and criticism of numerous individuals. The author invites further constructive criticism from interested parties.

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